



U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 2

February 26, 2019

BY ELECTRONIC MAIL

Robert Law, Ph.D.
de maximis, inc.
186 Center Street, Suite 290
Clinton, New Jersey 08809

Re: Revised Small Volume Chemical Water Column Monitoring Sampling Program
Characterization Summary

Dear Dr. Law:

The U.S. Environmental Protection Agency (EPA) has reviewed the *revised Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary*, dated November 2014 and the responses to EPA's comments. The report was prepared by AECOM on behalf of the Cooperating Parties Group (CPG) for the Lower Passaic River Study Area.

In accordance with Section X, Paragraph 44(d) of the Agreement, EPA has enclosed an evaluation of CPG's revised summary report and response to comments received on June 18, 2014. Please proceed with the four revisions noted "further action required" (comments 7, 18, 21 and 29) to the summary report within 30 days consistent with the enclosed comment evaluations. If there are any questions or clarifications needed, please contact me to discuss.

Sincerely,

A handwritten signature in black ink, appearing to read "Diane Salkie", is positioned above the typed name.

Diane Salkie, Remedial Project Manager
Lower Passaic River Study Area RI/FS

Cc: Zizila, F. (EPA)
Sivak, M. (EPA)
Hyatt, B. (CPG)
Potter, W. (CPG)

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
1	General	<p>In general, over the course of the program, all protocols and procedures specified in Revision 2 of the QAPP (August 2011) were followed along with those subsequently added in Revision 3 (July 2012) which was issued to address the validation of PCDD/PCDFs.</p> <p>With the exception of the inclusion of Method 200.8; all changes were recorded as Field Modifications and submitted to EPA for approval. Significant modifications made over the course of the program were summarized in the document. Also noted were deviations to procedures (i.e., nonconformances) that impacted data quality and/or resulted in variances from the program.</p> <p>All LPR samples from all events (routine, high and low flow) including those at RM 0 and tributaries specified in the QAPP were collected.</p>	Comment noted.	Response accepted.
2	General	<p>The Newark Bay Study Area (NBSA) samples are acknowledged in the SV-CWCM Report; however, the NBSA data are not substantively discussed or presented in the text, tables, figures, and appendices (in comparison to the Lower Passaic River data). We expect that NBSA SV-CWCM data evaluation will be performed and documented by Tierra Solutions, Inc. to satisfy the Data Quality Objectives (DQOS; as stated in Section 1.2, page 1-6).</p>	<p>Agreed. Tierra Solutions, Inc. should provide a detailed report on the data collected in the NBSA. The report provided by the CPG provides analysis of LPRSA data only. Language will be added to the Report that specifically indicates that LPRSA data are examined and that NBSA data will be examined and the technical report will be provided by Tierra.</p>	<p>Response accepted; a statement regarding the Newark Bay data presentation was added throughout the document where appropriate. Email confirmation received 12/23/14 that this response is acceptable to EPA.</p> <p>Please note that Tierra Solutions Inc. has been replaced by Occidental Chemical Corporation/ Glenn Springs Holdings Inc. for the RI of the Newark Bay Study Area.</p>

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
3	General	<p>Appendices F, J, and K list Target Analyte List (TAL metals) results for field samples, lab QC samples, and equipment blank samples analyzed by Method 200.8. This method is not listed on Table 2-1, and it is not listed in the SV-CWCM Quality Assurance Project Plan (QAPP Version 3; dated July 2012). It also appears as though some metals were reported under multiple methods (e.g., antimony under 200.8 and SW6020), often yielding different results. Please explain (1) why Method 200.8 was used when it was not identified in the QAPP and (2) how result values were selected for data evaluation and presentation from the two analytical methods.</p>	<p>(1) The Method E200.8 reference was provided in the ALS SOP for Method 1640 (which was included in the QAPP) and is associated with the reductive precipitation preparation method. The laboratory has verified that there is essentially no difference between the lab's analytical finish methods for 6020 and E200.8 that impacts the reported results. The use of the reduction precipitation <i>preparation</i> method (1640) however is an important difference and does affect the ICP-MS results for saline samples. This will be clarified in the Report by adding a discussion in the Nonconformance section (Section 2.6) to explain the method omission from the QAPP and adding the E200.8 method reference to the analytical summary table in the Report (Table 2-1).</p> <p>(2) There were no instances where the same field sample was analyzed using two different methods for the same analyte. The example provided by USEPA was a PE sample where the two fractions (total recoverable and dissolved) were analyzed using the two methods. The two fractions are different samples.</p>	<p>Response accepted; appropriate language was added to Section 2.6 (Nonconformance) and Table 2-1.</p>

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
4	General	<p>Please revise the following Table/Figure titles for consistency (the titles listed in the table of contents and report are not consistent with the titles on the attachments).</p> <ul style="list-style-type: none"> - Table 2-7 "Summary of USEPA Split Sampling for SV CWCM <u>Program</u>" - Table 2-8 "Location of Field and Laboratory Data for SV CWCM <u>Program</u>" - Table 3-1 "Selected Analytes and Physical Parameters for Presentation of <u>Results for the SV CWCM Program</u>" - Figure 3-1 "Flow at Dundee Dam During <u>High Flow Event 1</u>" - Figure 3-2 "Flows and Gage Heights on Tributaries During <u>High Flow Event 1</u>" - Figure 3-3 "Flow at Dundee Dam During <u>High Flow Event 2</u>" - - Figure 3-4 "Flows and Gage Heights on Tributaries During <u>High Flow Event 2</u>" 	These changes will be made to the Report.	Response accepted; the listed revisions have been verified.
5	Page 1-7, Section 1.3, First paragraph, First sentence	Please revise to say that the nine locations sampled in the LPRSA also included locations above Dundee Dam, Third River, Second River, and Saddle River.	This change will be made to the Report.	Response accepted; the listed revisions have been verified.
6	Page 1-7, Section 1.2, Second paragraph, Sixth sentence	The text states that samples were collected from "two depths (surface and near bottom) for station in RM 0-17.4". The location at 17.4 is above Dundee Dam and only a single sample was collected at mid-depth as noted later in the sentence. Please revise the sentence to exclude RM 17.4.	The location above Dundee Dam is not at RM 17.4 and was operationally referred to as "T175" indicating approximately RM 17.5 (although the actual location was at approximately RM 17.64). RM 17.4 defines the upstream-most boundary of the LPRSA. No change to the Report is necessary.	Response accepted; no revision to the report required.

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
7	Page 1-7, Second Paragraph and Page 1-8, First full paragraph on top of page	<p>Section 1.3 is part of the Introduction and generally describes the parameters analyzed from whole water (unfiltered) and filtered water samples.</p> <p>a. Please add a cross-reference to Section 2.2.4, which lists all of the parameters for the SV-CWCM or include a comprehensive list of whole water parameters in Section 1.3.</p> <p>b. Similar text clarification is requested in the Executive Summary (page ES-2, paragraph at top of page).</p>	<p>a. A cross-reference to appropriate sections will be included.</p> <p>b. Text will be added to the Executive Summary to clarify which analytes were filtered and which were from whole water.</p>	<p>Further action required.</p> <p>Stating that “All other analyte groups were collected and analyzed by the laboratory as whole water samples” does not fully address the comment. A clear listing of the parameters analyzed for the whole water samples is needed.</p>
8	Page 2-2, First Paragraph (reference to Table 2-3)	<p>a. Please state in Section 2.2.1 that the actual mean flow conditions were outside the targeted range for some events, including Routine Event 3 and High Flow Event 1. Moreover, mean flow conditions during Routine Event 1 (2,650 cfs) were similar to High Flow Event 1 (2,830 cfs).</p> <p>b. Please include in the main text the information on neap tide that is listed in Table 2-3, Footnote a.</p>	<p>a. Actual mean flows were outside the target flows stated in the QAPP. However, the criterion for the high flow was to PEAK >3,000 cfs, not to have an average flow of >3,000 cfs. And while the average flows for Routine Event 1 and High Flow Event 1 were similar, at no time did the flows during Routine Event 1 exceed the stated maximum flow for a Routine Event. Both of these events were in compliance with the flow criteria listed in the QAPP. No edits are required for discussion of these events. Routine Event 3 average flows (392 cfs) were below the target minimum flow for a Routine Event of 400 cfs. This will be noted.</p> <p>b. The Report will be edited as requested.</p>	<p>Response accepted; appropriate language was added to Section 2.2.1 and Table 2-3.</p>
9	Page 2-4, Section 2.3	<p>Please add a new sub-section to Section 2.3 and describe the sample collection process, particularly to state that metals were field-filtered and physical parameters were laboratory-filtered.</p>	<p>The field collection process is described in the SOPs appended to the QAPP. To address USEPA’s concern about filtration, a short subsection will be added to the Report that states how samples were collected, and which constituents were field- or laboratory-filtered.</p>	<p>Response accepted; a new Section 2.3.1 has been added to the report with the requested information.</p>
10	Page 2-4, Section 2.3.2, "Sample Identification"	<p>Please include a note (or an explanation on nomenclature) that Newark Bay samples follow a slightly different nomenclature protocol than described, specifically for Event and Station.</p>	<p>The text of the Report will be modified to clarify the sample identification scheme for the NBSA samples.</p>	<p>Response accepted; additional description of Newark Bay sample identification has been added to Section 2.3.3 (formerly Section 2.3.2).</p>

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
11	Page 2-7, Section 2.6, "Field Modification and Nonconforma nce"	As noted in general comments 1 and 3 above. A Field Modification or nonconformance discussion must be added to this section to explain the need and application of Method 200.8 to the program.	See response to Comment #3. The use of Method 200.8 will be clarified in Table 2-1. In addition, the use of Method 200.8 will be addressed in Section 2.6 under Nonconformances.	Response accepted; appropriate language was added to Section 2.6 (Nonconformance) and Table 2-1.
12	Page 2-8, Item No. 7, third sentence	Please correct typographical error: "USEPA agreed to a modified procedure that would allow the field team <u>to sample</u> from shore, rather than from mid-stream."	The typographical error will be corrected in the Report.	Response accepted; the listed revisions have been verified.
13	Page 2-8, Item No. 1, sixth sentence	Please correct typographical error (misspelling): "The purpose of <u>collecting</u> two depths..."	The typographical error will be corrected in the Report.	Response accepted; the listed revisions have been verified.
14	Page 3-2, References to maximum flows	To be consistent with Table 2-3, please state the mean flow conditions for High Flow Event 1 and High Flow Event 2.	The hydrograph peak, not the average flow, is the criterion for the High Flow events, per the QAPP. Table 2-3 will be modified, not the text, to clarify this.	Response accepted; the listed revisions have been verified.
15	Page 3-2, Section 3.3, First Paragraph (reference to PCB congeners)	Please clarify if the Total PCB Congener concentration represents the sum of validated, detected congener results, or if it is a laboratory-generated summation.	Summation of PCB congeners was conducted post-validation. The Report will be revised to provide clarification of Total PCB Congener summation.	Response accepted; the listed revisions have been verified.
16	Page 4-1, Section 4.0	Please state if the data usability assessment was inclusive of all data collected during the field program (i.e., Newark Bay data, tributary data, and Lower Passaic River data). If the assessment was limited, please state which datasets were evaluated.	The data usability assessment included all data collected during SV CWCM and did not exclude any areas (such as NBSA). This will be clarified in the Report.	Response accepted; the listed revisions have been verified.

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
17	Page 4-4, Section 4.3.5, Third Paragraph, Last Sentence	Please correct typographical error (missing words): "...one sample from station 12A-CE12-T175 <u>was</u> submitted..."	The typographical error will be corrected in the Report.	Response accepted; the listed revisions have been verified.
18	Table 2-1	The text in the "Laboratory SOP" column of the table is partially cut off by the right border of the column. Please re-format the table.	The typographical error will be corrected in the Report.	Further action required. The text is still being cut off by the right border of the table.
19	Table 2-6	Please include a footnote stating whether or not data validators documented a potential bias in the data.	Table 2-6 will be footnoted as requested.	Response accepted; the listed revisions have been verified.
20	Table 3-1	Please note the typographical error in the footnotes and change "pictograms" to "picograms".	The typographical error will be corrected in the Report.	Response accepted; the listed revisions have been verified.
21	Table L-1, Note a	The notation for internal standard areas is listed as an uppercase "I" it should be lowercase "i" as listed under the Rationale column of the table.	The typographical error will be corrected in the Report.	Further action required. Table L-1 was not included in the RTC review package.
22	Figure 2-1	Please clearly mark Routine Event 3 on Figure 2-1, which was planned to capture neap tide.	Routine Event 3 will be coded on Figure 2-1 to stand out and indicate neap tide.	Response accepted; the listed revisions have been verified.
23	Figure 3-1 and Figure 3- 3	Please mark the time of sample collection on the hydrographs in Figures 3-1 and 3-3.	The ranges of sample times for the LPRSA samples will be added to these figures.	Response accepted; the listed revisions have been verified.
24	Figure 3-5b Cadmium	Figure 3-5b for Cadmium Deep Samples (DS) uses an open circle instead of an open diamond (as presented in the remaining figures of this series). Please correct the symbol to be consistent.	The symbol on Figure 3-5b will be corrected to be diamond shaped.	Response accepted; the listed revisions have been verified.

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
25	Figure 3-22 through Figure 3-29	<p>a. Figures 3-22 through 3-29 were prepared with a consistent y-axis maximum. Please adjust the y-axis for the "A-Figures" or Dundee Dam figures in this sequence to increase the legibility of the data.</p> <p>b. Figure 3-25b for mercury has an appropriate y-axis with a maximum value of 300 ug/L. Please consider adjusting the y-axis for the other mercury plots (which are currently plotted at 800 ug/L) to be consistent with Figure 3-25b.</p>	<p>a. The figures will be examined. "A-Figures" (meaning AS samples or shallow depth?) are not differentiated. Depths are combined. The scales on the y-axes will be examined and adjusted if appropriate in increase resolution. A secondary y-axis for BS vs. AS samples may be used.</p> <p>b. The intent of keeping all axes the same scale is to provide reference in comparing concentrations. Figure 3-25b axis should be set to 800 µg/L to be consistent with the other plots, which have error bars that exceed 700 µg/L. Figure 3-25b will be changed.</p>	Response accepted; the listed revisions have been verified.
26	Appendix C, Seawater Trace Metals, Part 1 and Part 2	Please clarify if the "Seawater Trace Metals" were analyzed by Method 6020/6010 as stated in Table 2-1 of the CPG report, or if they were analyzed by Method 200.8 as stated in the CPG electronic data deliverable.	Trace metals were analyzed by Method 200.8. This method reference is included in the laboratory SOP for Method 1640 as explained in response to Comment #3.	Response accepted.
27	Appendix H	<p>Please add a footnote describing why turbidity readings don't correspond to the full sampling duration for the following events:</p> <ul style="list-style-type: none"> - Page H-211 "Newark Bay Northeast at Ebb Tide Near Bottom" - Page H-237 "Newark Bay Northeast at Low Tide Shallow" <p>The first sentence in Section 3.1.2 states "turbidity was continuously measured at the depth of sampling for the entire interval over which the sample was pumped." This statement does not appear to be in full agreement with the data presented in Appendix H and may need to be revised to reflect exceptions.</p>	The turbidity charts will be examined. The "pump off" (i.e., end of sampling) time was not recorded in the logbooks for all samples and may therefore be "best professional judgment" or time off station in the charts. The Report will be revised such that the charts not in full agreement will be noted.	Response accepted; the listed revisions have been verified (Non-conformance item 7 and Section 3.1.2).

**Small Volume Chemical Water Column Monitoring Sampling Program Characterization Summary for the Lower Passaic River Study Area
Dated February 2014 Response to 6/18/14 EPA Comments**

No.	Section	EPA Comment	Response to EPA Comment	Comment Review
28	Appendix H	<p>a. The turbidity readings are presented on plots with the maximum y-axis value equal to 120 NTU, while the majority of data is less than 20 NTU. This data presentation makes it difficult to discern variability in the turbidity readings. Please re-format the graphics by adjusting the maximum y-axis value to 40 or 60 NTU.</p> <p>b. The inclusion of the horizontal line denoting sampling duration can be confusing, especially because the line is plotted at an arbitrary value of 100 NTU on the turbidity axis. Please consider modifying the data presentation. One possible approach would be to use two colors for data points in the turbidity series: one color for data collected during sampling and a second color for data collected outside the sampling duration. The horizontal line could then be omitted.</p>	<p>a. The y-axis was set to capture the highest turbidity and was uniform throughout all charts in the Appendix. The objective of presenting all turbidity data in Appendix H was to indicate where any spike may have occurred during sampling, not to provide a detailed and small-scale view of the data. However, to address EPA's comment, the axes will be reviewed and adjusted as appropriate.</p> <p>b. The sampling duration presentation will be modified.</p>	Response accepted; the listed revisions have been verified.
29	Appendix H, Page H-221	Please add a footnote describing whether the turbidity readings collected between 8:44 am and 8:50 am (Near Bottom depth) are expected to reflect actual field conditions or represent a sonde malfunction or perhaps contact of sampling equipment with the sediment bed.	Field notes will be examined and time stamp on the YSI will be confirmed. A note will be made on the mentioned Figure to indicate potential source of the high turbidity readings between 08:44-08:50.	Further action required. A footnote has not been added to the figure, nor does there appear to be language added to Section 3.1.2 to address this comment. In addition, a response is needed regarding the findings of the back-check of the field notes.
30	Appendix J, Beginning on pdf page 19 of 142	Please correct the typographical error in the title for Appendix J (".../PCDF" rather than ".../PCDV"). The error also appears in the pdf bookmarks.	The typographical error will be corrected in the Report.	Response accepted; the listed revisions have been verified.